REMARKS

The amendment to claim 1 is supported at least by the specification at ¶ [0038] and FIG. 2. The amendment to claims 8 and 35 are supported at least by the specification at ¶¶ [0044]-[0046], and FIGS. 1, 3, and 4.

Claims 2 and 19-34 are canceled. New claims 44-54 are added. Support for new claims 44-46 can be found at least in original claims 6, 33, and 34, respectively. Support for new claims 47-49 and 52 can be found at least in the specification at ¶ [0045]. Support for new claims 50 and 53 can be found at least in the drawings at FIG. 3. Support for new claims 51 and 54 can be found at least in the drawings at FIG. 1.

REJECTIONS UNDER § 103

Claims 1-7 and 19-43 stand rejected under § 103(a) as being unpatentable over Kato (EP 1,378,787) in view of an IBM Technical Bulletin (IBM Technical Disclosure Bulletin, "Electro-Luminescent Backlight for Color Display," vol. 35:2, 1992).

Claims 8-18 stand rejected under § 103(a) as being unpatentable over Kato in view of Parthasarathy (US 6,420,031). Applicants request reconsideration of the rejections. Claims 19-34 are canceled.

Claims 1-7

Claims 1-7 stand rejected under § 103(a) as being unpatentable over Kato in view of the IBM Technical Bulletin. As an initial matter, Applicants respectfully submit that the device described in the IBM Technical Bulletin is not operative, and therefore, cannot be applied as prior art in this rejection.

According to MPEP 2121.01, the prior art being applied in the rejection must supply an "enabling disclosure." The IBM Technical Bulletin does not provide an "enabling disclosure" because it is a hypothetical speculation that is plainly inoperative on its face. The IBM Technical Bulletin discloses an electroluminescent backlight for a color display. The backlight has red, green, and blue electroluminescent layers separated by transparent electrodes. Each of the electroluminescent layers is disclosed as a single layer, not a double layer forming a pn-junction. Notably, the electroluminescent layers are not insulated from each other.

Thus, the IBM Technical Bulletin discloses a *single* layer, *high field emission* type emissive layer. However, such a device would not be capable of emitting light when a voltage is applied across the electrodes due to the lack of insulator material between the electroluminescent layers. An electroluminescent device that operates by high field emission requires insulators to function properly (to generate the electric field required for operation).

If an electroluminescent device is not of a high field electroluminescent type (and no insulators are present), the emissive layer should have at least two layers forming a pn-junction in order to emit light. However, the device in the IBM Technical Bulletin has neither insulators nor pn-junctions. Therefore, the device described in the IBM Technical Bulletin is plainly inoperative and does not provide an "enabling disclosure" as required by MPEP 2121.01. As such, the IBM Technical Bulletin cannot be applied as prior art in this rejection.

But in any case, even if the Examiner disagrees with Applicants' position that the IBM Technical Bulletin is not an "enabling disclosure," Applicants respectfully submit that the claims are non-obvious over Kato in view of the IBM Technical Bulletin. To facilitate the Examiner's review, claim 1 is rewritten below in clean form as follows:

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1. A transflective display device comprising:

a first OLED device having a reflective electrode and characterized as emitting light of a first bandwidth, the first OLED device being disposed on a substrate element having a rough surface, the rough surface being on the side opposite the first OLED device;

a second OLED device characterized as emitting light of a second bandwidth that is different from the first bandwidth, the second OLED device being transparent and positioned at the rough surface side of the substrate element for the first OLED device; and

a light modulating element positioned to modulate the light emitted by the first and second OLED devices.

Thus, in the invention of claim 1, there is at least one OLED device (first) at the side of the substrate opposite the rough surface and at least one OLED device (second) at the side of the substrate with the rough surface. For example, FIG. 2 shows a display device having a backlight that comprises three OLEDs: blue OLED 156, green OLED 154, and red OLED 152. Blue

OLED 156 is fabricated on a substrate element 112 having a roughened surface 113. Blue OLED 156 has a reflective electrode 117. Blue OLED 156 is positioned at the side of substrate element 112 opposite the roughened surface 113. Green OLED 154 and red OLED 152 are positioned at the side of substrate element 112 with the roughened surface 113.

Light 161B emitted by blue OLED 156 is scattered by substrate 112, whereas light 161R and 161G emitted directly outward by the red and green OLEDs are not scattered by substrate 112 (although backwardly directed light may still be scattered by substrate 112). Furthermore, light 162 entering the backlight is reflected off of reflective electrode 117 and directed back out (as light 163) of the backlight. This configuration may be particularly suitable for blue OLED 156 since shorter wavelength blue light is more easily scattered than longer wavelength green or red light.

In contrast, Kato does not disclose any configuration in which there is at least one OLED at the side of the substrate with the rough surface and at least one OLED at the side opposite the rough surface of the substrate. Each of Kato's embodiments involves a single electroluminescent layer. For example, Figure 5 of Kato shows a substrate 11 having a roughened surface, and an OLED on the smooth side of the substrate. But there is no electroluminescent layer on the rough side of the substrate.

Because Kato does not consider a multiple-OLED configuration for making a backlight, there is no motivation to configure multiple OLEDs according to the arrangement recited in claim 1. Although the IBM Technical Bulletin may disclose the use of multiple emitting elements, it also does not provide any motivation to configure multiple OLEDs according to the arrangement recited in claim 1.

For at least these reasons, Applicants respectfully submit that claim 1, and the claims that depend therefrom, are non-obvious over Kato and the IBM Technical Bulletin. Accordingly, withdrawal of the rejections is respectfully requested.

Claims 8-18 and 35-43

Claims 8-18 and 35-43 stand rejected under § 103(a) as being unpatentable over Kato in view of the IBM Technical Bulletin or Parthasarathy. Independent claim 8 recites an OLED backlight having a first OLED and a second OLED. The first OLED is disposed on a substrate having a rough surface. The first OLED includes a reflective conductive layer having its shape

imparted by the shape of the surface roughness on the substrate. For example, this may result from the reflective conductive layer being deposited on the rough surface such that the reflective conductive layer conforms to the shape of the rough surface on the substrate.

Claim 35 recites an OLED backlight comprising a substrate having a rough surface. An electrode comprising a reflective material is disposed over the substrate. The electrode is at the side of the rough surface such that the shape of the rough surface is imparted to the electrode. An example of the invention of claims 8 and 35 is shown in FIG. 1, which shows a backlight 160 comprising a red OLED 152, green OLED 154, and blue OLED 156. Blue OLED 156 is disposed on a substrate element 112 having a reflective electrode 117. The substrate element 112 has a rough surface 113 that imparts its shape to reflective electrode 117.

In claims 8 and 35, the light-scattering rough surface is located <u>on</u> the substrate element surface. In contrast, in Figures 1 and 2 of Kato, the scattering surface is at the electrode/passivation film interface 21 located remotely from the substrate (see paragraphs [0023] and [0024]). This is an inventive distinction over Kato because in the claimed invention, the rough surface on the substrate has dual functions that work synergistically to improve light extraction: (1) it creates a scattering element for scattering light; and (2) it imparts its shape to the reflective conductive layer (e.g., reflective electrode 117) that is located over the substrate element. As explained at ¶ [0044] on page 14 and ¶ [0046] on page 15, by having OLED 156 (correction, not 154) deposited on the roughened substrate element 112, the shape of the underlying rough surface 113 is imparted to reflective electrode 117. As explained in ¶ [0037], the uneven surface imparted to reflective electrode 117 aids in directing reflected light toward light modulating element 180.

In contrast, in Figures 1 and 2 of Kato, because the scattering interface 21 is located *above* the reflective electrode 13, the scattering interface 21 cannot impart its shape to the reflective electrode 13.

Paragraph [0048] of Kato indicates that the minutely-sized scattering concavities/convexities may be on the substrate surface instead. However, these scattering concavities/convexities are too small to impart their shape to the reflective electrode 13. Paragraph [0024] of Kato states that the height of the concavities/convexities is less than the thickness of transparent electrode 15 and passivation film 16; for example, less than 1/10 of their the thickness. Considering that the thickness of a transparent electrode is generally in the range

of 5 – 15 nm, the concavities/convexities at interface 21 would be less than about 1.5 nm in size. Considering that the thickness of the organic films in an organic light emitting device are generally in the range of 10 – 50 nm, these concavities/convexities would be too small to impart their shape to reflective electrode 13. In any case, Kato makes no statement anywhere that it intends for the shape of the scattering interface 21 be imparted to reflective electrode 13.

The IBM Technical Bulletin describes an electro-luminescent backlight. As explained above, the IBM Technical Bulletin does not provide an "enabling disclosure," and therefore, cannot be applied as prior art. But in any case, the substrate used in this backlight does not have a surface roughness, and therefore, provides nothing that cures the above-mentioned deficiencies of Kato. Likewise, Parthasarathy does not use a substrate having a surface roughness, and therefore, provides nothing that cures the above-mentioned deficiencies of Kato.

For at least these reasons, Applicants respectfully submit that claims 8 and 35, and the claims that depend therefrom, are non-obvious over Kato, the IBM Technical Bulletin, and Parthasarathy. Accordingly, withdrawal of the rejections is respectfully requested.

Summary

The invention of claims 1 and 3-7 has least one OLED device (first) at the side of the substrate opposite the rough surface and at least one OLED device (second) at the side of the substrate with the rough surface. This is a configuration that is useful for backlights comprising multiple OLEDs. Since Kato does not use multiple OLEDs, there is no motivation to modify Kato according to the arrangement recited in claim 1.

In the invention of claims 8 and 35, the rough surface on the substrate has dual functions that work synergistically to improve light extraction: (1) it creates a scattering element for scattering light; and (2) it imparts its shape to the reflective conductive layer that is located over the substrate element. None of the cited references has an appreciation for this synergistic relationship between the rough surface on the substrate and the reflective conductive layer.

CONCLUSION

Applicant(s) respectfully submit that the present application is in condition for allowance. The Examiner is invited to contact Applicant(s)' representative to discuss any issue that would expedite allowance of this application. The Commissioner is authorized to charge all required

fees, fees under § 1.17, or all required extension of time fees, or to credit any overpayment to Deposit Account No. 11-0600 (Kenyon & Kenyon LLP).

Respectfully submitted,

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